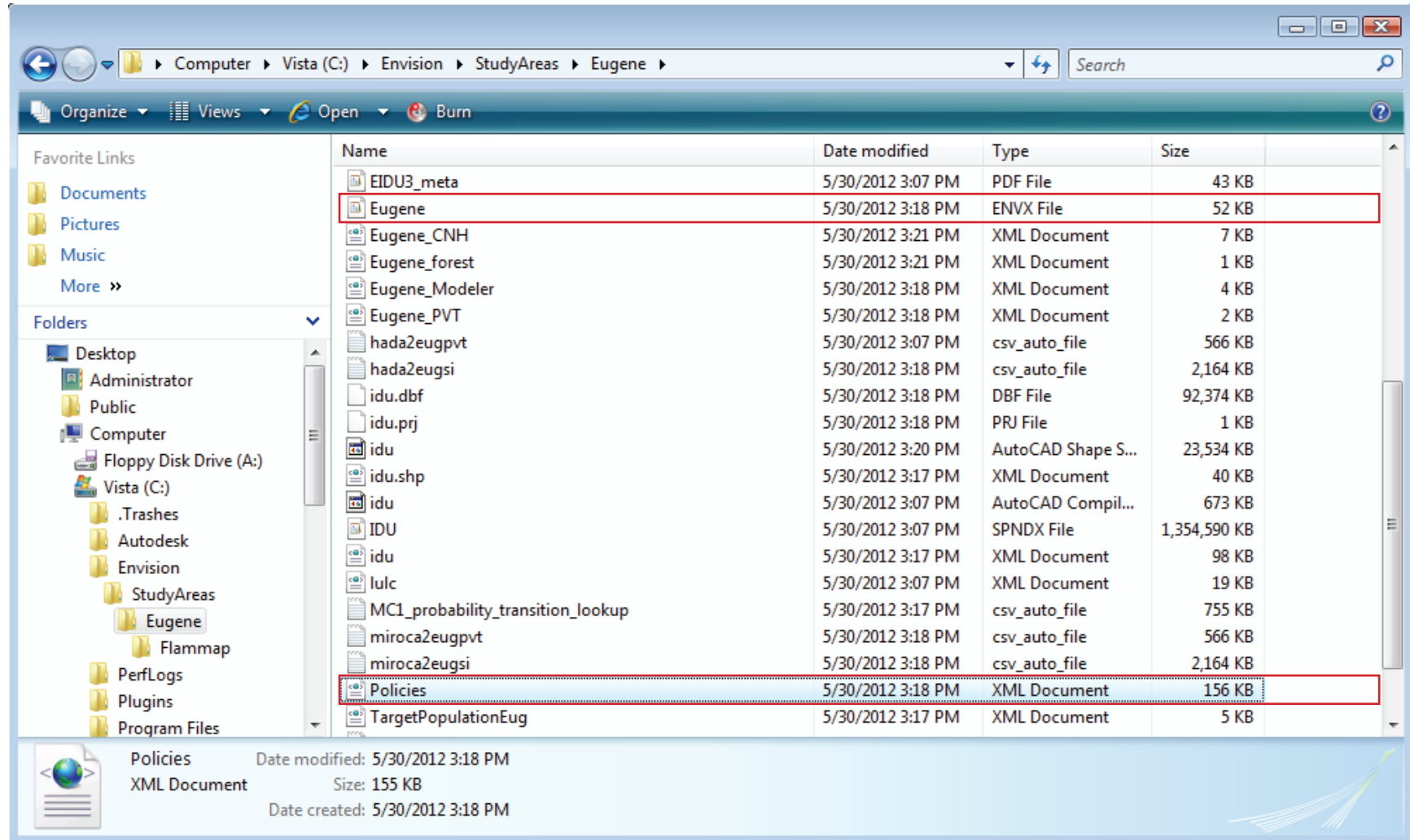


ENVISION: TUTORIAL 2

What can/should be modified in ENVISION?

For selected policies, you can modify: site attributes (where in the landscape it can apply, i.e. specific IDU characteristics like low slope or not wetlands), outcomes (what happens when the policy is applied, does the vegetation type change and does the change expand into neighboring IDUs?) and adoption rates (controlled in a number of ways, one is to increase the value of the scores in the Policy.xml file). You may also choose to change things like budget amounts and allocations, which must be modified in the Eugene.envx file.

Where Are the Policies.xml and Eugene.envx Files? (Use Notepad++ or TextWrangler to open and modify)



Modifying the Policies.xml File - Initial view and parts of interest for each policy

The screenshot shows the TextWrangler application with the Policies.xml file open. The file content is as follows:

```

1 |<?xml version='1.0' encoding='utf-8' ?>
2 |
3 |<policies>
4 |  <global_constraint name='Fuels Treatment' type='resource_limit'
5 |  value='FuelsTreatmentBudget' />
6 |  <global_constraint name='Restoration' type='resource_limit' value='RestorationBudget' />
7 |  <global_constraint name='Non-incentive policies' type='resource_limit' value='999999' />
8 |
9 |  <policy
10 |    id='1'
11 |    name='FT1. Defensible space maintenance and dwelling protection'
12 |    originator='BJ'
13 |    persistMin='10'
14 |    persistMax='110'
15 |    scheduled='0'
16 |    mandatory='0'
17 |    compliance='0.9'
18 |    exclusive='0'
19 |    startDate='-1'
20 |    endDate='-1'
21 |    use='1'
22 |    color='240,50,50'
23 |    shared='1'
24 |    editable='1' >
25 |    <siteAttr>
26 |      N_DU > 0 {rural structures are present}
27 |      and DEFENSE &lt;= 0
28 |      and
29 |        ( (VEGCLASS >= 200 and VEGCLASS < 700 {and are forested successtional vegclass})
30 |          or VEGCLASS = 66
31 |          or VEGCLASS = 92
32 |          or VEGCLASS = 93
33 |          or VEGCLASS = 95 {tree-based agricultural crops and woodlots}
34 |        )
35 |    </siteAttr>
36 |    <outcomes>
37 |      <outcome probability='0.167'>
38 |        DEFENSE=1[e:10,0]
39 |      </outcome>
40 |      <outcome probability='0.167'>
41 |        DEFENSE=2[e:10,0]
42 |      </outcome>
43 |      <outcome probability='0.167'>
44 |        DEFENSE=3[e:10,0]
45 |      </outcome>
46 |    </outcomes>
47 |    <narrative>Policy Intentions: Assumes landowner willingness to implement strategies
48 |    that reduce wildfire risk around their home when surrounding vegetation creates
49 |    substantial fire hazard due to its capacity to carry fire. Presumed management includes
50 |    maintenance of a defensible space zone with fuel breaks and fire-resistant vegetation
51 |    30-100 feet (10-30m) from structures, and to the extent feasible, fire-resistant
52 |    construction materials. If: IDU is outside the UGBs and has residential dwellings or other
53 |    rural structures Then: Defensible space practices are implemented and maintained around
54 |    rural structures. After 10 years, treatments are neglected or abandoned at the rate of
55 |    1%/year.
56 |    **Scenarios: applies to all scenarios and uses same policy scores.**
57 |    NOTES: adoption rate cut to 50% to compensate for doubling of agent decision rate.
58 |    </narrative>

```

The following sections are highlighted with red boxes in the image:

- The opening `<policy` tag and its attributes (lines 9-23).
- The `<siteAttr>` block (lines 24-34).
- The `<outcomes>` block (lines 35-45).
- The `<narrative>` block (lines 46-58).

```
2284 L </narrative>
2285 ▾ <scores>
2286 ▾ <objective name='Global' >
2287 L <score value='0' query='' />
2288 L </objective>
2289 ▾ <objective name='Ecocentric' >
2290 L <score value='-1' query='' />
2291 L </objective>
2292 ▾ <objective name='Utilitarian' >
2293 L <score value='3' query='' />
2294 L </objective>
2295 ▾ <objective name='Property Rights' >
2296 L <score value='3' query='' />
2297 L </objective>
2298 ▾ <objective name='Financial' >
2299 L <score value='-3' query='' />
2300 L </objective>
2301 ▾ <objective name='Climate Risk Averse' >
2302 L <score value='-1' query='' />
2303 L </objective>
2304 ▾ <objective name='Fire Risk Averse' >
2305 L <score value='-1' query='' />
2306 L </objective>
2307 L </scores>
2308 L </policy>
2309
```

Modifying the Policies.xml File - How to identify fields and other important variables in the Site Attributes and Outcomes

```

1264 <policy
1265   id='13'
1266   name='FT13(ir). Extreme makeover (oak restoration in conifer forest)'
1267   originator='Gwynne|BJ'
1268   persistMin='-1'
1269   persistMax='-1'
1270   scheduled='0'
1271   mandatory='0'
1272   compliance='0.9'
1273   exclusive='0'
1274   startDate='-1'
1275   endDate='-1'
1276   use='1'
1277   color='80,80,20'
1278   shared='1'
1279   editable='1' >
1280   <constraint name='FT13 Restoration' gcnName='Restoration' basis='unit_area'
1281     lookup='Eugene_Manage_Costs.csv|manage=11;vegclass=@vegclass;PrevTrt=@PrevTrt'
1282     initCost='initCost' maintenanceCost='maintenanceCost' duration='0' />
1283   <siteAttr>
1284     ((VEGCLASS >= 243 and VEGCLASS < 245)
1285     or (VEGCLASS >= 246 and VEGCLASS < 248)
1286     or (VEGCLASS >= 263 and VEGCLASS < 265)
1287     or (VEGCLASS >= 270 and VEGCLASS < 272) {10-20" and >20" Doug-fir,
1288     including maple and grand-fir subdominants})
1289     and (PSDOMCL = 11 {Upland Prairie}
1290     or PSDOMCL = 21 {Oak Savanna}
1291     or PSDOMCL = 31 {Oak-Fir Woodland}
1292     or PVT = 4 {Temperate Continental Conifer}
1293     or (PVT = 6 {Subtropical Mixed Forest} and VEGCLASS > 259 {not DD
1294     coverytype})
1295     or (PVT = 17 {C3 Grass} and VEGCLASS > 244 {not open DD vegclass}))
1296     and WithinArea(MANAGE >= 10 and MANAGE < 14 {restored oak and pine savanna
1297     and woodland}, 280, 0.33)
1298     and {harvestable timber in taxlot:}
1299     WithinArea(TAXLOTID = @TAXLOTID
1300     and ACTOR=@ACTOR {same actor type}
1301     and ((VEGCLASS >= 243 and VEGCLASS < 245)
1302     or (VEGCLASS >= 246 and VEGCLASS < 248)
1303     or (VEGCLASS >= 263 and VEGCLASS < 265)
1304     or (VEGCLASS >= 270 and VEGCLASS < 272) {10-20" and >20"
1305     Doug-fir, including maple and grand-fir subdominants}), 160, 0.25)
1306   </siteAttr>
1307   <outcomes>
1308     <outcome probability='0.5' >
1309       Expand(TAXLOTID=@TAXLOTID {same taxlot as nucleus IDU}
1310       and ACTOR=@ACTOR {same actor type}
1311       and ((VEGCLASS >= 240 and VEGCLASS < 259)
1312       or (VEGCLASS >= 260 and VEGCLASS < 269)
1313       or (VEGCLASS >= 270 and VEGCLASS < 272))
1314       and (PSDOMCL = 21 {Oak Savanna}
1315       or PSDOMCL = 31 {Oak-Fir Woodland}
1316       or PVT = 4 {Temperate Continental Conifer}
1317       or (PVT = 6 {Subtropical Mixed Forest}
1318       and VEGCLASS > 259 {not DD coverytype})
1319       or (PVT = 17 {C3 Grass} and VEGCLASS > 244 {not open DD
1320       vegclass})),
1321       80940 {8ha/20ac},
1322       MANAGE=11{High quality Savanna Restoration}

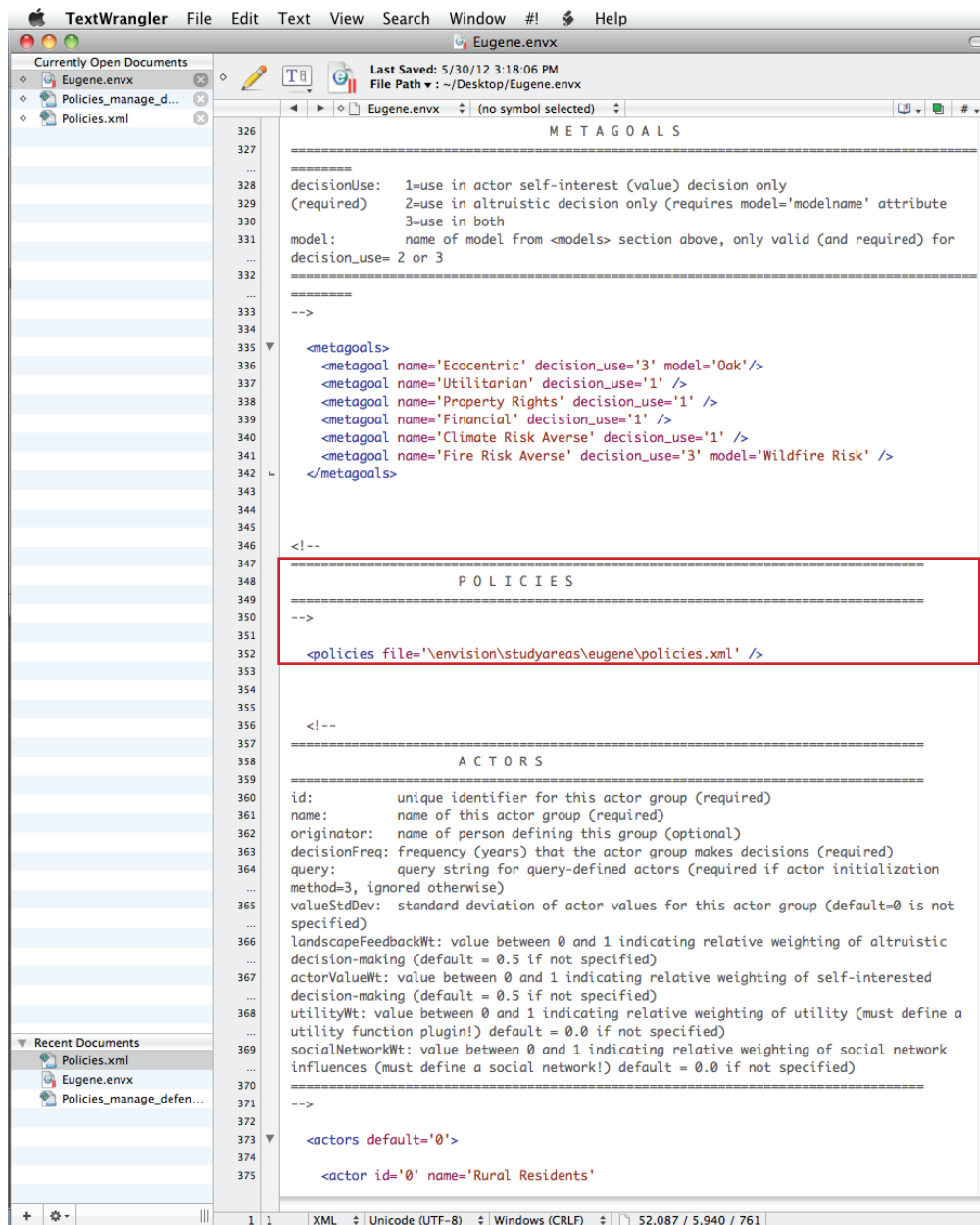
```

```
1317         MANAGE=11{High quality Savanna Restoration}
1318         and DISTURB=4 {restoration}
1319         and PREVTRT=1 {this has been treated}
1320         and TSA=-1 {not abandoned}
1321         and EXP_POLICY=13 )
1322     and EXP_POLICY=-13
1323 </outcome>
1324 </outcomes>
1325 <narrative>
1326     Policy Intentions: Attempts to restore historic range of environmental variability
    ...
    for oak savanna by restoring former savanna that has succeeded to conifer forest. Assumes
    ...
    willingness to convert conifer forest with merchantable trees to high quality oak savanna
    ...
    with the expectation that it will produce a short-term profit as well as receive public
    ...
    sector incentives, despite some risk to future property rights. Emphasis is placed on
    ...
    conversion of conifer forests to oak in areas already in the process of being restored so
    ...
    as to create more contiguous oak habitats across a full range of historical site
    ...
    productivities. If: IDU is currently an untreated conifer forest, was historically
    ...
    dominated by upland prairie or oak habitats or is within a PVT that is not conducive to
    ...
    the current vegetation but is to oak, and is surrounded by substantial amounts of restored
    ...
    oak or pine habitats (min. 8ha/20ac w/in 24ha/60ac), and contains sufficient merchantable
    ...
    conifers within the taxlot around the IDU for a commercial harvest (min. 2ha/5ac w/in
    ...
    8ha/20 ac) Then: The IDU becomes a high quality oak savanna and harvest extends out to a
    ...
    total of up to 8ha/20ac of contiguous Douglas-fir covertypes, including IDUs with smaller
    ...
    trees. This policy is intended to help expand restored oak in close proximity to restored
    ...
    oak habitats so as to create larger contiguous areas of oak. In particular it is intended
    ...
    to be used by landowners already involved in oak restoration for either conservation or
    ...
    fire hazard reduction.
    ...
    **Scenarios: applies only to mixed fuels scenarios, e.g. HCM, and uses same policy
    ...
    scores.
    ...
    **NOTES: could relax area constraints on merchantable trees w/in taxlot if too
    ...
    restrictive: Expand will go out to include 20 ac. treated, not just within 20 ac of parent
    ...
    IDU or just pole-sized trees?
    ...
1329 </narrative>
1330 <scores>
1331 <objective name='Ecocentric' >
1332 <score value='2' query='' />
1333 </objective>
1334 <objective name='Utilitarian' >
1335 <score value='1' query='' />
1336 </objective>
1337 <objective name='Property Rights' >
1338 <score value='-2' query='' />
1339 </objective>
1340 <objective name='Financial' >
1341 <score value='3' query='' />
1342 </objective>
1343 <objective name='Climate Risk Averse' >
1344 <score value='3' query='' />
1345 </objective>
1346 <objective name='Fire Risk Averse' >
1347 <score value='3' query='' />
1348 </objective>
1349 </scores>
1350 </policy>
```

Modifying the Eugene.envx File - Initial view

```
1 |<?xml version='1.0' encoding='utf-8' ?>
2 |
3 |<Envision ver='6.0'>
4 |
5 |<!--
6 |=====
7 |                      S E T T I N G S
8 |=====
9 |For ActorIntialization Method:
10 | 0 = no actors
11 | 1 = based on weights specified in the IDU coverage
12 | 2 = based on groups defined in the ACTOR field in the IDU coverage
13 | 3 = based on a spatial queries defined for the actor groups
14 | 4 = use a single, uniform actor
15 | 5 = generate random actors (not fully supported at this time
16 |
17 |logMsgLevel: 0=log everything, 1=log critical events, 2= log nothing
18 |noBuffering: 0=disable polygon subdivision during Buffer(), 1=enable subdivision
19 |multiRunDecadalMapsModulus: output frequency (years) for maps during multiruns
20 |areaCutoff: 0=minimum area of a polygon at whcih a label will be shown
21 |debug: 0=use debug mode, 1=no debug mode
22 |defaultPeriod: default simulation period (years)
23 |dynamicUpdate: flag indicating whether display should be updated dynamically 0=no
24 |update, 1=update views, 2=update main map, 3=update both
25 |spatialIndexDistance: distance to build spatialindex to speed up spatial operation.
26 |0=disable, gt 0 = distance to use
27 |
28 |-->
29 |<settings
30 |  actorInitMethod      ='2'
31 |  actorAssociations    ='0'
32 |  loadSharedPolicies   ='1'
33 |  debug                ='0'
34 |  logMsgLevel          ='0'
35 |  noBuffering          ='1'
36 |  multiRunDecadalMapsModulus ='10'
37 |  startYear            ='0'
38 |  defaultPeriod        ='50'
39 |  dynamicUpdate        ='3'
40 |  spatialIndexDistance ='2500'
41 |  areaCutoff           ='0'
42 |  deltaAllocationSize  ='32000'
43 |  actorDecisionElements ='7'
44 |  actorDecisionMethod  ='1'
45 |  policyPreferenceWt   ='0.333333'
46 |  mapUnits             ='meters'
47 |  shuffleActorPolys    ='1'
48 |  parallel              ='0'
49 |  addReturnsToBudget   ='0'
50 |  collectPolicyData    ='0'
51 |  exportMaps           ='0'
52 |  exportMapInterval    ='0'
53 |  exportBmpSize        ='0'
54 |  exportBmpCols        ='1'
55 |  exportOutputs        ='0'
```

Modifying the Eugene.envx File - Where it points to the Policies.xml file (in case you change the filename)



The screenshot shows the TextWrangler application with the Eugene.envx file open. The file is divided into sections: METAGOALS, POLICIES, and ACTORS. The POLICIES section is highlighted with a red box. The code in the POLICIES section is as follows:

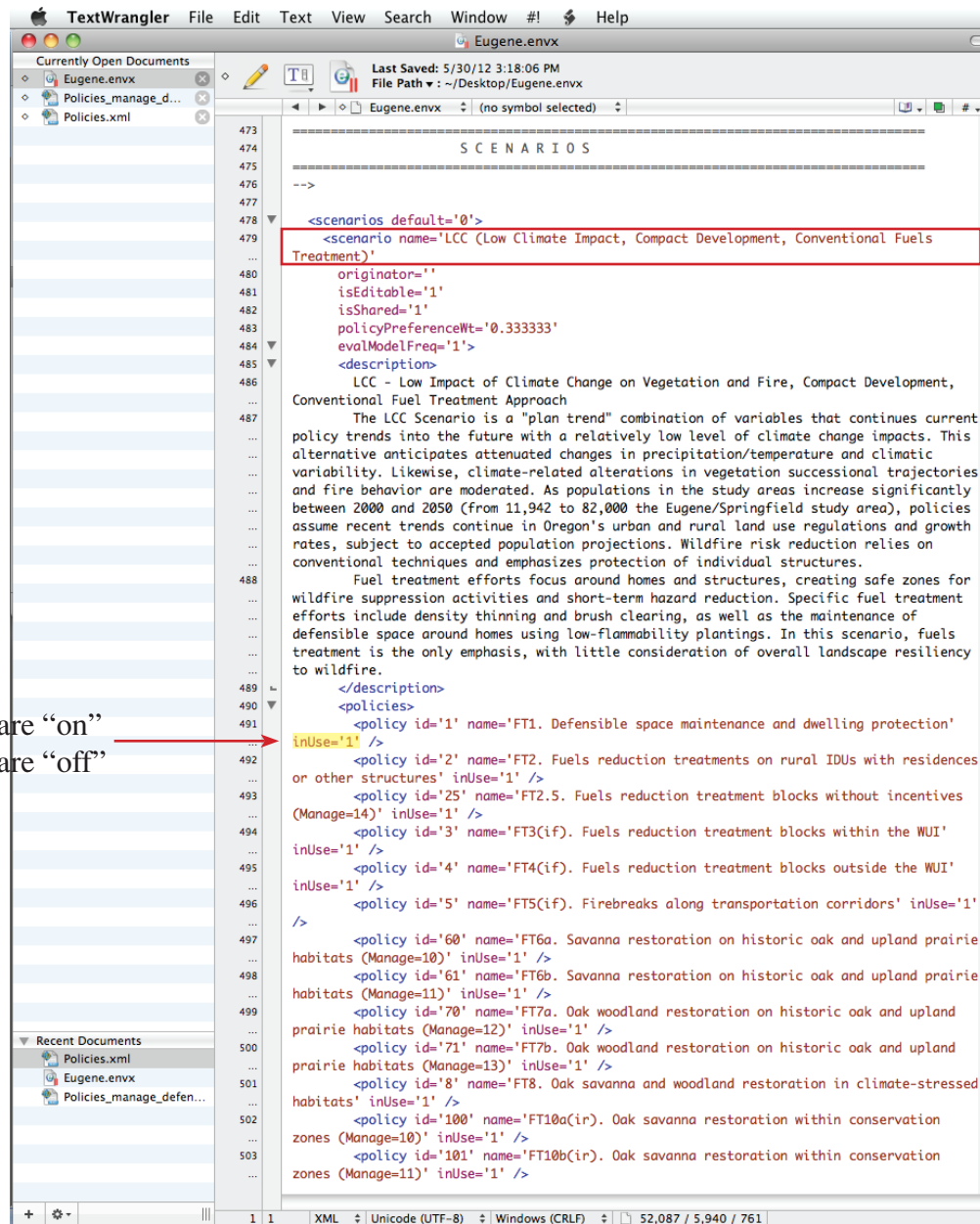
```
-----  
POLICIES  
-----  
-->  
<policies file='\\envision\studyareas\eugene\policies.xml' />  
-----  
<!--
```

The ACTORS section contains the following code:

```
-----  
ACTORS  
-----  
id: unique identifier for this actor group (required)  
name: name of this actor group (required)  
originator: name of person defining this group (optional)  
decisionFreq: frequency (years) that the actor group makes decisions (required)  
query: query string for query-defined actors (required if actor initialization  
method=3, ignored otherwise)  
valueStdDev: standard deviation of actor values for this actor group (default=0 is not  
specified)  
landscapeFeedbackWt: value between 0 and 1 indicating relative weighting of altruistic  
decision-making (default = 0.5 if not specified)  
actorValueWt: value between 0 and 1 indicating relative weighting of self-interested  
decision-making (default = 0.5 if not specified)  
utilityWt: value between 0 and 1 indicating relative weighting of utility (must define a  
utility function plugin!) default = 0.0 if not specified)  
socialNetworkWt: value between 0 and 1 indicating relative weighting of social network  
influences (must define a social network!) default = 0.0 if not specified)  
-----  
-->  
<actors default='0'>  
<actor id='0' name='Rural Residents'
```

Modifying the Eugene.envx File - How to turn policies on/off for different scenarios

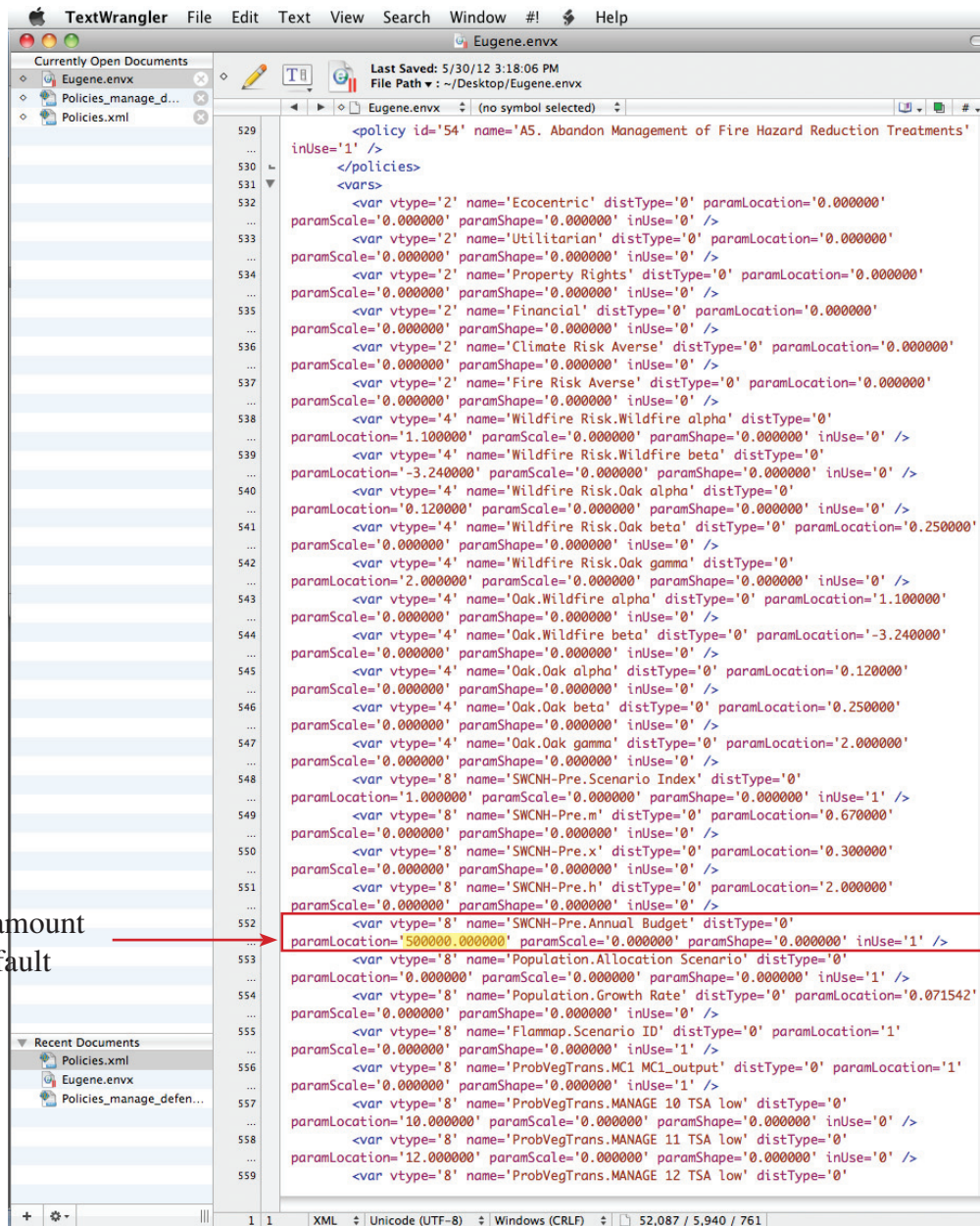
inUse='1' for policies that are "on"
inUse='0' for policies that are "off"



The screenshot shows the TextWrangler application editing the Eugene.envx file. The main window displays XML code for scenarios and policies. A red box highlights the scenario definition for 'LCC (Low Climate Impact, Compact Development, Conventional Fuels Treatment)'. A red arrow points from the explanatory text on the left to the 'inUse='1'' attribute in the first policy definition.

```
-----
SCENARIOS
-----
-->
<scenarios default='0'>
  <scenario name='LCC (Low Climate Impact, Compact Development, Conventional Fuels Treatment)'
    originator=''
    isEditable='1'
    isShared='1'
    policyPreferenceWt='0.333333'
    evalModelFreq='1'>
    <description>
      LCC - Low Impact of Climate Change on Vegetation and Fire, Compact Development,
      Conventional Fuel Treatment Approach
      The LCC Scenario is a "plan trend" combination of variables that continues current
      policy trends into the future with a relatively low level of climate change impacts. This
      alternative anticipates attenuated changes in precipitation/temperature and climatic
      variability. Likewise, climate-related alterations in vegetation successional trajectories
      and fire behavior are moderated. As populations in the study areas increase significantly
      between 2000 and 2050 (from 11,942 to 82,000 the Eugene/Springfield study area), policies
      assume recent trends continue in Oregon's urban and rural land use regulations and growth
      rates, subject to accepted population projections. Wildfire risk reduction relies on
      conventional techniques and emphasizes protection of individual structures.
      Fuel treatment efforts focus around homes and structures, creating safe zones for
      wildfire suppression activities and short-term hazard reduction. Specific fuel treatment
      efforts include density thinning and brush clearing, as well as the maintenance of
      defensible space around homes using low-flammability plantings. In this scenario, fuels
      treatment is the only emphasis, with little consideration of overall landscape resiliency
      to wildfire.
    </description>
    <policies>
      <policy id='1' name='FT1. Defensible space maintenance and dwelling protection'
        inUse='1' />
      <policy id='2' name='FT2. Fuels reduction treatments on rural IDUs with residences
      or other structures' inUse='1' />
      <policy id='25' name='FT2.5. Fuels reduction treatment blocks without incentives
      (Manage=14)' inUse='1' />
      <policy id='3' name='FT3(if). Fuels reduction treatment blocks within the WUI'
        inUse='1' />
      <policy id='4' name='FT4(if). Fuels reduction treatment blocks outside the WUI'
        inUse='1' />
      <policy id='5' name='FT5(if). Firebreaks along transportation corridors' inUse='1'
        />
      <policy id='60' name='FT6a. Savanna restoration on historic oak and upland prairie
      habitats (Manage=10)' inUse='1' />
      <policy id='61' name='FT6b. Savanna restoration on historic oak and upland prairie
      habitats (Manage=11)' inUse='1' />
      <policy id='70' name='FT7a. Oak woodland restoration on historic oak and upland
      prairie habitats (Manage=12)' inUse='1' />
      <policy id='71' name='FT7b. Oak woodland restoration on historic oak and upland
      prairie habitats (Manage=13)' inUse='1' />
      <policy id='8' name='FT8. Oak savanna and woodland restoration in climate-stressed
      habitats' inUse='1' />
      <policy id='100' name='FT10a(ir). Oak savanna restoration within conservation
      zones (Manage=10)' inUse='1' />
      <policy id='101' name='FT10b(ir). Oak savanna restoration within conservation
      zones (Manage=11)' inUse='1' />
    </policies>
  </scenario>
</scenarios>
```

Modifying the Eugene.envx File - How to change the annual budget amount



```
529 <policy id='54' name='A5. Abandon Management of Fire Hazard Reduction Treatments'  
inUse='1' />  
530 </policies>  
531 <vars>  
532 <var vtype='2' name='Ecocentric' distType='0' paramLocation='0.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
533 <var vtype='2' name='Utilitarian' distType='0' paramLocation='0.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
534 <var vtype='2' name='Property Rights' distType='0' paramLocation='0.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
535 <var vtype='2' name='Financial' distType='0' paramLocation='0.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
536 <var vtype='2' name='Climate Risk Averse' distType='0' paramLocation='0.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
537 <var vtype='2' name='Fire Risk Averse' distType='0' paramLocation='0.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
538 <var vtype='4' name='Wildfire Risk.Wildfire alpha' distType='0'  
... paramLocation='1.100000' paramScale='0.000000' paramShape='0.000000' inUse='0' />  
539 <var vtype='4' name='Wildfire Risk.Wildfire beta' distType='0'  
... paramLocation='-3.240000' paramScale='0.000000' paramShape='0.000000' inUse='0' />  
540 <var vtype='4' name='Wildfire Risk.Oak alpha' distType='0'  
... paramLocation='0.120000' paramScale='0.000000' paramShape='0.000000' inUse='0' />  
541 <var vtype='4' name='Wildfire Risk.Oak beta' distType='0' paramLocation='0.250000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
542 <var vtype='4' name='Wildfire Risk.Oak gamma' distType='0'  
... paramLocation='2.000000' paramScale='0.000000' paramShape='0.000000' inUse='0' />  
543 <var vtype='4' name='Oak.Wildfire alpha' distType='0' paramLocation='1.100000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
544 <var vtype='4' name='Oak.Wildfire beta' distType='0' paramLocation='-3.240000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
545 <var vtype='4' name='Oak.Oak alpha' distType='0' paramLocation='0.120000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
546 <var vtype='4' name='Oak.Oak beta' distType='0' paramLocation='0.250000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
547 <var vtype='4' name='Oak.Oak gamma' distType='0' paramLocation='2.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
548 <var vtype='8' name='SWCNH-Pre.Scenario Index' distType='0'  
... paramLocation='1.000000' paramScale='0.000000' paramShape='0.000000' inUse='1' />  
549 <var vtype='8' name='SWCNH-Pre.m' distType='0' paramLocation='0.670000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
550 <var vtype='8' name='SWCNH-Pre.x' distType='0' paramLocation='0.300000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
551 <var vtype='8' name='SWCNH-Pre.h' distType='0' paramLocation='2.000000'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
552 <var vtype='8' name='SWCNH-Pre.Annual Budget' distType='0'  
... paramLocation='500000.000000' paramScale='0.000000' paramShape='0.000000' inUse='1' />  
553 <var vtype='8' name='Population.Allocation Scenario' distType='0'  
... paramLocation='0.000000' paramScale='0.000000' paramShape='0.000000' inUse='1' />  
554 <var vtype='8' name='Population.Growth Rate' distType='0' paramLocation='0.071542'  
... paramScale='0.000000' paramShape='0.000000' inUse='0' />  
555 <var vtype='8' name='Flammap.Scenario ID' distType='0' paramLocation='1'  
... paramScale='0.000000' paramShape='0.000000' inUse='1' />  
556 <var vtype='8' name='ProbVegTrans.MCI_MCI_output' distType='0' paramLocation='1'  
... paramScale='0.000000' paramShape='0.000000' inUse='1' />  
557 <var vtype='8' name='ProbVegTrans.MANAGE 10 TSA low' distType='0'  
... paramLocation='10.000000' paramScale='0.000000' paramShape='0.000000' inUse='0' />  
558 <var vtype='8' name='ProbVegTrans.MANAGE 11 TSA low' distType='0'  
... paramLocation='12.000000' paramScale='0.000000' paramShape='0.000000' inUse='0' />  
559 <var vtype='8' name='ProbVegTrans.MANAGE 12 TSA low' distType='0'
```

Change the annual budget amount here, set at \$500,000 by default